

## Two New Species of Mysidacea (Crustacea) from Adjacent Waters of the Ogasawara Islands, Southern Japan

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**Abstract** Two new species, *Meierythrops parvispinis* and *Nipponomysis brevicauda*, are described from adjacent waters of the Ogasawara (Bonin) Islands, southern Japan. *Meierythrops parvispinis*, the second species of this genus, is distinguished from the type species, *M. pacificus* Murano, 1981, by the characteristics of the eye, antennal scale, mandibular palp, maxillule, abdominal somites and telson. With the addition of the present new species, the generic diagnosis is partly revised. *Nipponomysis brevicauda* differs from all the species belonging to *Nipponomysis* in the exopod of the fourth male pleopod with two unequal terminal setae, and the armature of the telson.

**Key words:** Mysidacea, new species, Ogasawara Islands, *Meierythrops*, *Nipponomysis*

During a biological survey carried out in June 1995 in adjacent waters of the Ogasawara (Bonin) Islands, southern Japan, by TR/V *Seiyo-Maru*, Tokyo University of Fisheries, two undescribed species belonging to *Meierythrops* and *Nipponomysis* were collected.

*Meierythrops* was established for *M. pacificus* collected from the eastern Japan (Murano 1981), and has hitherto been constituted of only one species. The second species is described here.

*Nipponomysis* was instituted for the Asian species group of *Proneomysis* W. M. Tattersall, 1933, by Takahashi and Murano (1986), and currently comprises 17 species from coastal waters of temperate to tropical eastern Asia. The species of *Nipponomysis* is recorded first from Ogasawara Islands.

The body length was measured from the tip of the rostrum to the posterior end of the telson excluding apical spines. The type materials are deposited in the National Science Museum, Tokyo (NSMT).

***Meierythrops* Murano, 1981**

*Type species.* *Meierythrops pacifica* Murano, 1981

*Diagnosis.* Body somewhat inflated. Carapace with anterior margin evenly rounded, leaving eyes and antennular peduncles exposed in dorsal view; posterior margin deeply emarginate. Eye with cornea well pigmented, not compressed dorsoventrally. Antennular peduncle with outer distal corner of first segment not produced; third segment connected with second obliquely. Antennal scale small, outer margin smooth, terminating in spiniform process. Endopod of third to eighth thoracic limbs long and slender, carpopropodus divided into 3 subsegments. Marsupium of female composed of 2 pairs of brood lamellae. All pleopods of male well developed, biramous, endopod of first pleopod reduced to unsegmented lobe, exopod of first pleopod and both rami of second to fifth pleopods multi-segmented, without modified setae; all pleopods of female uniramous and unsegmented. Endopod of uropod slightly shorter than exopod, without spines in statocyst region. Telson very short, broadly triangular, apex armed with single pair of spines and 1 or 2 median plumose setae; lateral margin smooth.

*Remarks.* The original diagnosis of *Meierythrops* given by Murano (1981) is altered with the reception of the second species. Main alternations are made in the following points: the elimination of the description on the mandibular palp and maxillule, the addition of character in the endopod of thoracic limbs and marsupium, and the slight modification of the description on the eye, uropod and telson.

*Meierythrops* is related to *Heteroerythrops* O. S. Tattersall, 1955, and *Shenimysis* Wang, 1998, in the short telson with the lateral margins naked and the apical margin armed with a pair of spines. *Meierythrops*, however, differs from *Heteroerythrops* in the antennal scale with a denticle marking the end of the naked outer margin (Murano, 1981). *Meierythrops* is also distinguished from *Shenimysis* by the third pleopod of male; in *Meierythrops* the third male pleopod does not have the modified setae, whereas in *Shenimysis* it bears a long modified seta on the penultimate segment of the endopod.

***Meierythrops parvispinis* sp. nov.**

(Figs. 1, 2)

*Type material.* Holotype (NSMT-Cr 13941), adult male (4.4 mm); allotype (NSMT-Cr 13942), adult female (4.1 mm); paratypes (NSMT-Cr 13943), adult females (3.5 and 3.7 mm); 26°59.24'N, 142°15.02'E, between Haha-jima and Chichi-jima Islands, 0–543 m, bottom net (mouth opening 60×85 cm, mesh size 1 mm) without opening-closing device, 19 June 1995.

*Description.* Body short and robust, without processes along ventral median line of thoracic somites. Carapace slightly produced anteriorly into rostral plate with

broadly rounded frontal margin; posterior margin deeply emarginate, leaving posterior four thoracic somites exposed dorsally (Fig. 1 A, B).

Eye globular, about  $\frac{2}{5}$  as wide as carapace, slightly broader than long; cornea occupying about  $\frac{4}{5}$  of eye; eyestalk without papilliform process on dorsal surface (Fig. 1 A, B).

Antennular peduncle of male more robust than that of female, first segment 1.2 times as long as broad, outer distal corner not produced into projection, second segment short, third segment connected with second obliquely, slightly longer than first, with well developed sexual appendage (Fig. 1 A); in female first segment almost as long as third (Fig. 1 B).

Antennal scale short, not reaching anterior margin of antennular peduncle, 3 times as long as broad, without apical suture; outer margin smooth, slightly concave, terminating in spiniform process; terminal lobe about 1.4 times longer than spiniform process of outer margin (Fig. 1 C). Antennal peduncle robust, almost as long as scale, third segment longest, 1.2 times longer than first, twice as long as second (Fig. 1 C).

Labrum with anterior margin rounded. Mandible developed; second segment of palp with proximal  $\frac{3}{4}$  flattened with inner margin expanded in middle, distal  $\frac{1}{4}$  cylindrical; third segment about  $\frac{2}{3}$  length of second, about 4.5 times as long as broad, with barbed setae along inner margin (Fig. 1 D). Outer lobe of maxillule with distal margin transversely truncate, armed with 2 strong barbed spines, surface with 5 same-sized plumose setae (Fig. 1 E). Maxilla with second segment of endopod 1.7 times as long as broad; exopod large, about twice as long as broad, lateral margin armed with 13 plumose setae on proximal  $\frac{2}{3}$  and hair-like setae on distal  $\frac{1}{3}$ , apex with 2 plumose setae (Fig. 1 F).

Endopod of first thoracic limb short, robust, basis with endite, preischium, ischium and merus expanded medially (Fig. 1 G). Endopod of second thoracic limb long and slender, carpopropodus almost as long as merus, gradually narrowing distally, not divided into subsegments, dactylus with long, straight claw terminally (Fig. 1 H). Endopod of third thoracic limb long and slender, about twice as long as exopod, carpopropodus 3-subsegmented, proximal subsegment divided obliquely from middle one, twice as long as each of distal two subsegments (Fig. 2 A). Endopod of fourth to eighth thoracic limbs broken off. Exopod of first to fourth and sixth thoracic limbs with 10-segmented flagellum, basal plate with tiny spine on outer corner (Figs. 1 H, 2 A); other exopods missing from specimen.

Penis of male about 3.3 times as long as broad in lateral view, armed with 3 short plumose setae on proximal  $\frac{1}{3}$  of anterior margin and 3 naked setae on distal margin (Fig. 2 B).

Marsupium of female composed of 2 pairs of brood lamellae.

First to fifth abdominal somites subequal in length, sixth somite 1.8 times longer than preceding one; pleural plate developed in male.

Male pleopods well developed, biramous, without modified setae. First pleopod

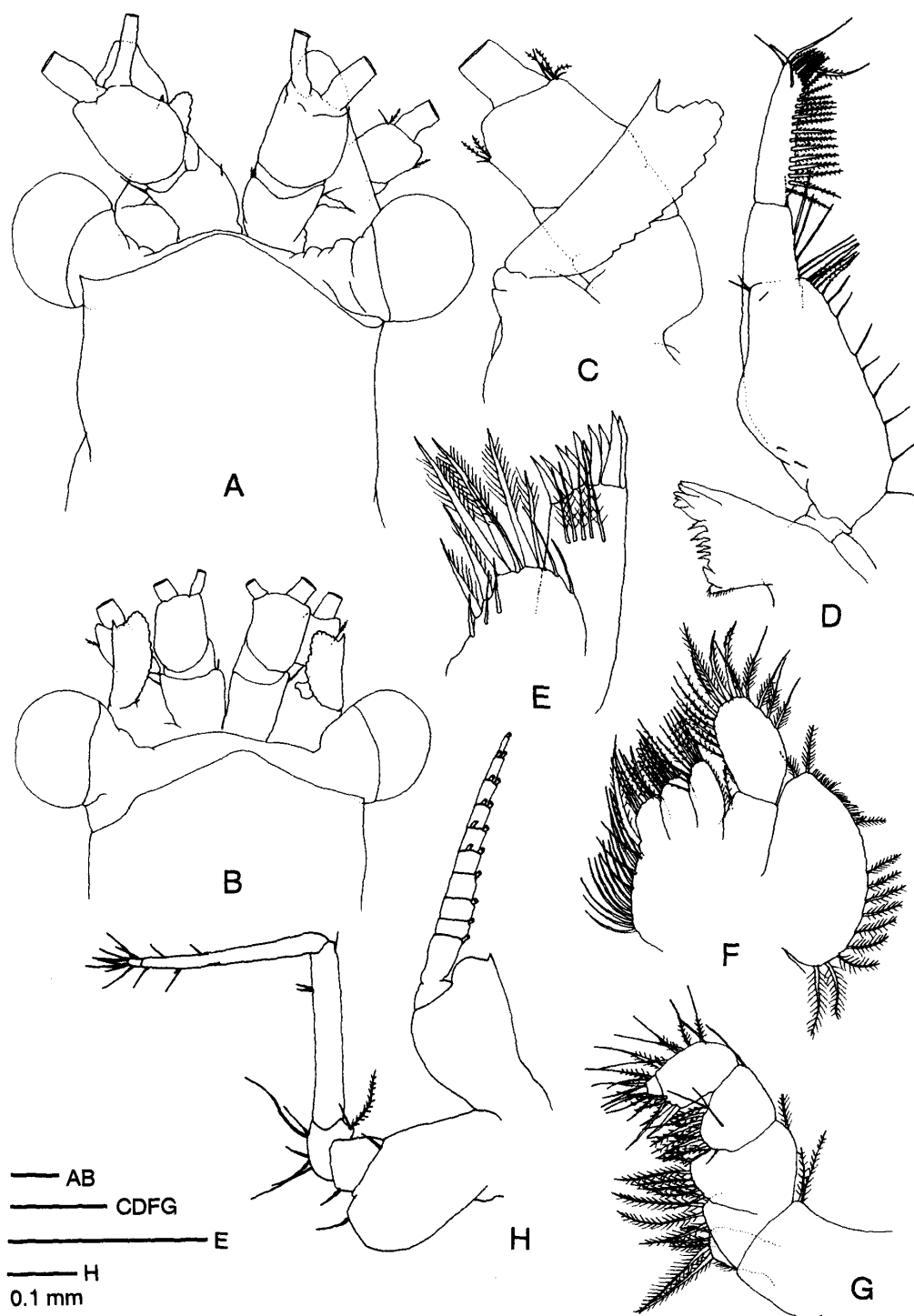


Fig. 1. *Meerythrops parvispinis* sp. nov., A, C–H: male (holotype); B: female (allotype). A, B, anterior portion of body, dorsal view; C, antenna; D, mandible (as for the third segment of palp, the right side is the inner margin because of turning over); E, maxillule; F, maxilla; G, endopod of first thoracic limb; H, second thoracic limb.

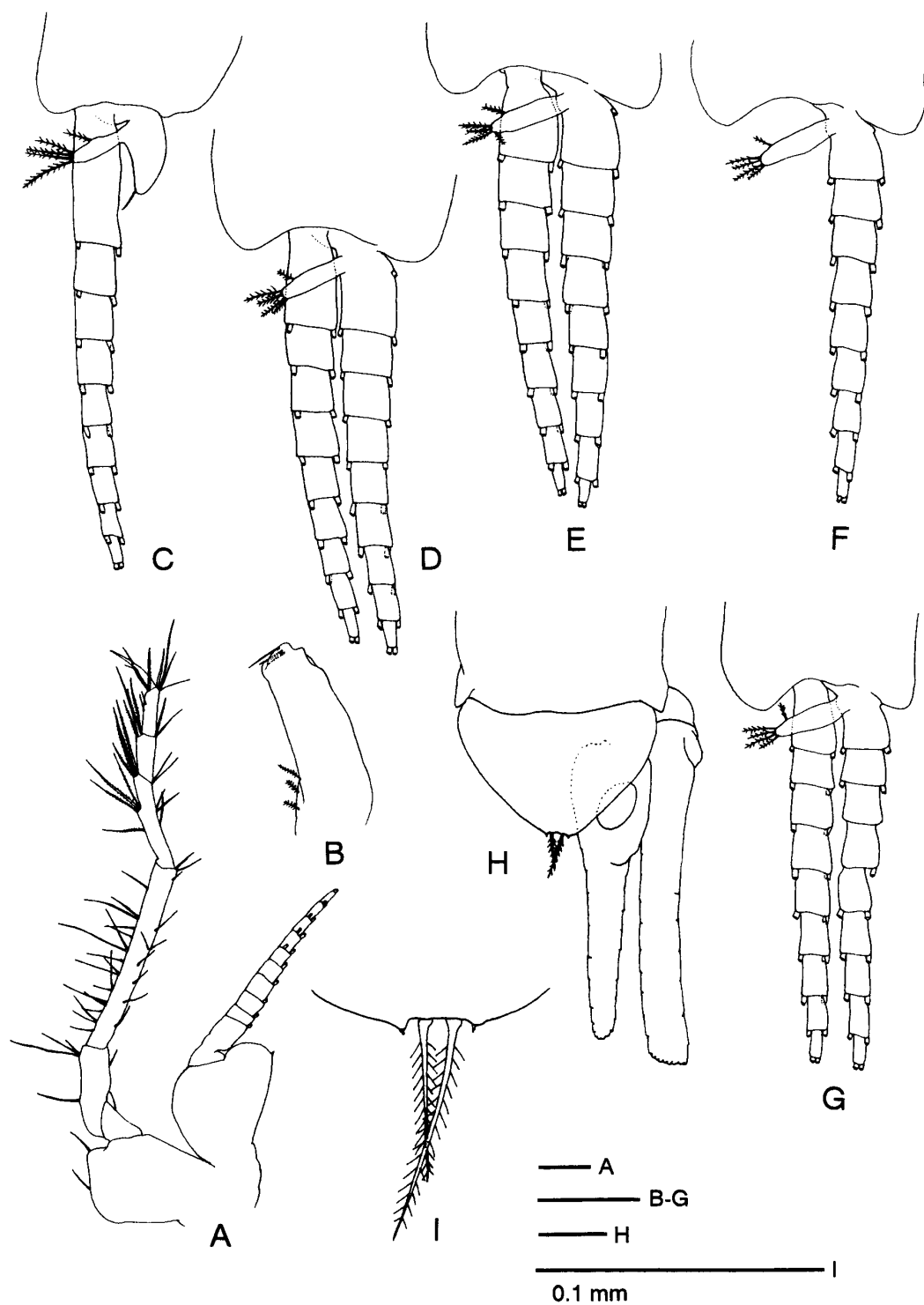


Fig. 2. *Meerythrops parvispinis* sp. nov., A–I: male (holotype). A, third thoracic limb; B, penis, lateral view; C–G, first to fifth pleopods (exopod of fourth broken off); H, telson and uropod, dorsal view; I, apex of telson, dorsal view.

Table 1. Comparison of morphological characters between *Meierythrops pacificus* and *M. parvispinis*.

	<i>M. pacificus</i> Murano, 1981	<i>M. parvispinis</i> sp. nov
Eye	Cornea occupying about 1/3 of eye, as wide as eyestalk	Cornea occupying about 4/5 of eye, much wider than eyestalk
Antennal scale	6 times as long as broad	3 times as long as broad
Mandibular palp	Second segment slender, 3.5 times as long as broad	Second segment with proximal 3/4 expanded, about 2.5 times as long as broad
Maxillule	Outer lobe obliquely truncate distally	Outer lobe transversely truncate distally
Abdominal somites	Without pleural plate	With pleural plate developed
Telson	Apical margin with pair of slender spines and single median plumose seta	Apical margin with pair of tiny spines and pair of plumose setae

with 9-segmented exopod and unsegmented endopod, endopod armed terminally with single short, naked seta (Fig. 2 C). Second to fifth pleopods with both rami 9-segmented, exopods slightly longer than endopods. Pseudobranchial lobe on proximal segment of endopod slender (Fig. 2 C–G). Female pleopods reduced to unsegmented single lobe.

Endopod of uropod tapered, overreaching distal end of telson for 2/3 of its length, without spines in statocyst region; exopod slightly longer than endopod, slightly curved outwardly (Fig. 2 H).

Telson broadly triangular, very short, 2/3 length of maximum breadth, less than half as long as last abdominal somite; apical margin narrow, shallowly depressed, armed with pair of tiny spines at corners and pair of median plumose setae being about half of telson length; lateral margin evenly convex, smooth (Fig. 2 H, I).

*Etymology.* The species name is derived from Latin *parvus*, small, and *spina*, spine, referring to the apical tiny spines of the telson.

*Remarks.* *Meierythrops parvispinis* is easily distinguished from *M. pacificus* as shown in Table 1.

### *Nipponomysis* Takahashi & Murano, 1986

#### *Nipponomysis brevicauda* sp. nov.

(Figs. 3, 4)

*Type material.* Holotype (NSMT-Cr 13944), adult male (6.5 mm); allotype (NSMT-Cr 13945), adult female (5.0 mm); paratypes (NSMT-Cr 13946), immature male (3.8 mm) and immature female (3.9 mm); Maeno-hama (sandy beach), Haha-

jima Island, Ogasawara Islands, 1 m, sledge net (mouth opening 10×30 cm, mesh size 0.33 mm), 17 June 1995.

*Other material.* 1 juvenile (2.0 mm) (NSMT-Cr 13947); Futami Harbor, Chichi-jima Island, Ogasawara Islands, towing net under an electric light, 16 June 1995. 3 immature females (3.7–4.0 mm) and 6 juveniles (2.3–2.6 mm) (NSMT-Cr 13948); collection data same as types.

*Description.* Integument smooth. Carapace with anterior margin produced into triangular rostrum with pointed apex, not extending to base of antennular peduncle, lateral margin of rostrum concave; anterolateral corner rounded; posterior margin emarginate, leaving last three thoracic somites exposed dorsally (Fig. 3 A, B).

Eye developed, slightly flattened, shorter than broad; cornea reniform in dorsal view, wider than eyestalk; eyestalk without papilla on dorsal surface, basal part hispid (Fig. 3 A, B).

Antennular peduncle of male more robust than that of female, first segment almost as long as third, second segment wider than long, third segment about 1.3 times as long as broad; in female first segment almost as long as third, third segment about 1.5 times as long as broad (Fig. 3 A, B).

Antennal scale lanceolate with rounded apex, 5–5.5 times as long as broad, extending to apex of sexual appendage of antennular peduncle in male and extending beyond antennular peduncle by 1/5 to 1/4 of scale in female, all margins setose, suture present near apex (Fig. 3 A–C). Antennal peduncle extending slightly beyond middle of scale in male and to proximal 2/5 of scale in female, second segment longest, about 1.2–1.3 times longer than third (Fig. 3 C). Antennal sympod with spiniform process at outer distal corner (Fig. 3 C).

Labrum with acute spiniform process on anterior margin (Fig. 3 D). Mandibular palp with proximal part of second segment expanded laterally, third segment about half as long as second (Fig. 3 E). Inner lobe of maxillule armed with 1 long, spiniform, 3 robust, plumose, and 4 plumose setae on inner margin, 3 long, barbed, spiniform, and 1 long plumose setae on distal margin, and 1 long and 2 short plumose setae on outer margin; outer lobe armed with 11 stout spines on distal margin and 3 setae on surface, outer margin with swelling in middle (Fig. 3 F). Maxilla with exopod not reaching distal margin of proximal segment of endopod; second segment of endopod long, 2.8 times as long as broad, without spines on margin (Fig. 3 G).

Endopod of first thoracic limb short, robust, basis with developed endite, dactylus with strong terminal claw (Fig. 3 H). Endopod of second thoracic limb robust, carpopropodus 3/4 length of merus, dactylus with strong claw (Fig. 3 I). Endopod of third to eighth thoracic limbs slender, carpopropodus divided into 3 subsegments by transverse articulation, proximal subsegment longest (Figs. 3 J, 4 A, B). Exopod of thoracic limbs with flagellum 8-segmented in first and eighth limbs, 9-segmented in second to seventh limbs; outer corner of basal plate without or with 1–3 spinules (Figs. 3 J, 4 B).

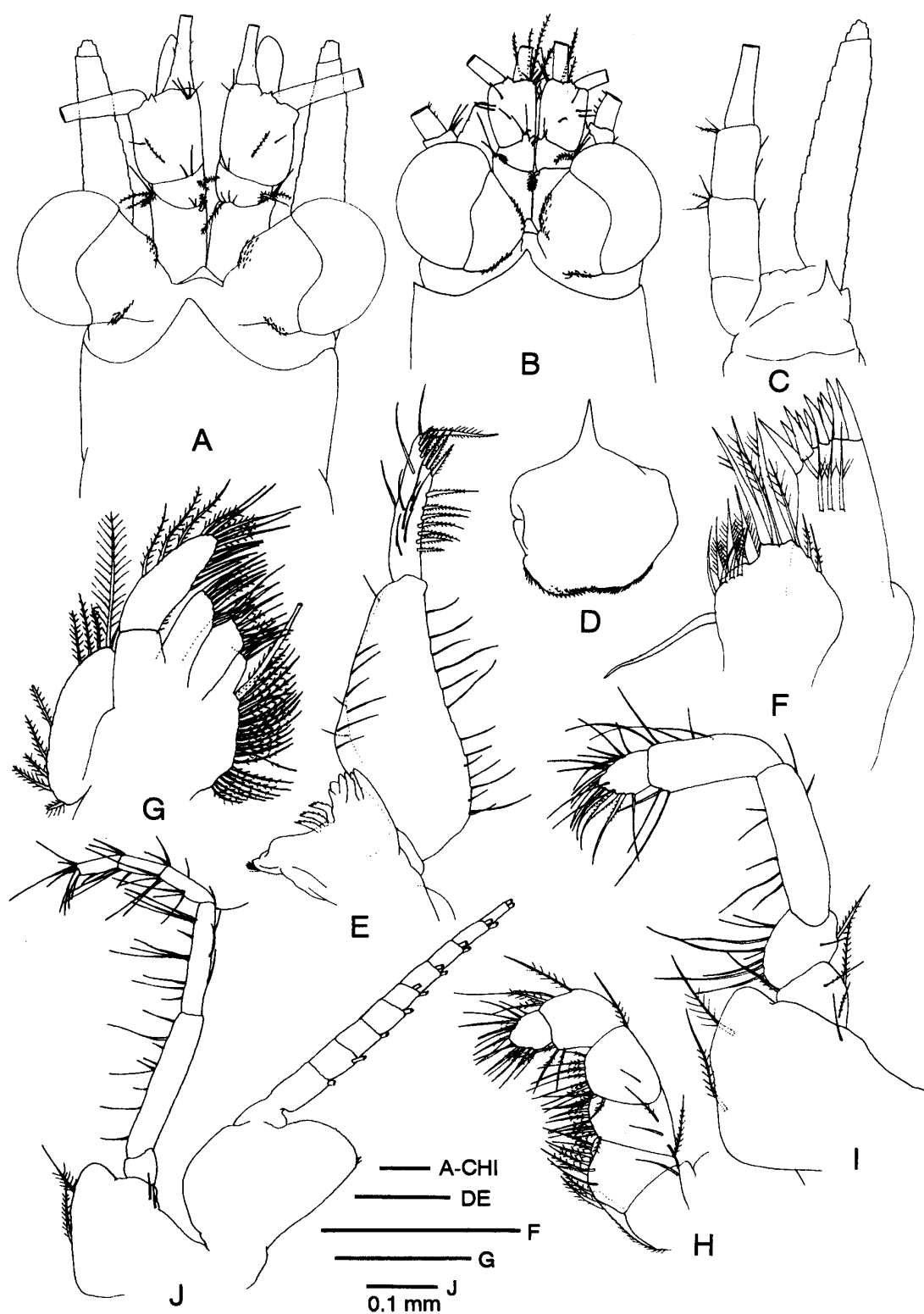


Fig. 3. *Nipponomysis brevicauda* sp. nov., A, C–J: male (holotype); B: female (allotype). A, B, anterior portion of body, dorsal view; C, antenna; D, labrum, ventral view; E, mandible (as for the third segment of palp, the right side is the inner margin because of turning over); F, maxillule; G, maxilla; H, endopod of first thoracic limb; I, endopod of second thoracic limb; J, third thoracic limb.

Penis about twice as long as broad in lateral view, armed with 5 long and 2 short setae on distal half of posterior margin, 4 long, medially curved setae on apical margin, and 3 long plumose setae on anterior margin (Fig. 4 C).

Marsupium composed of 2 pairs of oostegites.

All abdominal somites subequal in length, without folds or spine rows.

All pleopods of both sexes, except fourth pleopod of male, reduced to unsegmented lobe; fifth pleopod 1.3 times as long as third in both sexes, 1.2 times as long as fourth in female (Fig. 4 D–F, H). Fourth pleopod of male biramous; endopod reduced to unsegmented lobe; exopod elongate, extending beyond slightly middle of sixth abdominal somite, 3-segmented, first segment 2.3 times as long as endopod, second segment about 1/5 of first in length, these two segments armed with pair of feeble setae at distal end, third segment almost as long as second, with 1 feeble seta at inner distal corner and 2 stout barbed setae on terminal end, these two setae different in length, longer one 2.4 times as long as third segment and about twice as long as shorter one (Fig. 4 G). Pseudobranchial lobe of all pleopods of both sexes rather developed (Fig. 4 D–H).

Endopod of uropod tapering, extending beyond apex of telson by 1/6 of its length, armed on inner ventral margin of statocyst region with 8 spines becoming longer distally (Fig. 4 I, J); exopod 1.3 times as long as endopod, slightly curved outwardly (Fig. 4 I).

Telson subtriangular, about 1.2 times longer than last abdominal somite, about 1.7 times as long as maximum width at base. Lateral margin of telson slightly concave in proximal 1/3 and slightly convex in distal 2/3; proximal 2/5 armed with 5 or 6 rather large spines sparsely set, distal 2/5 with 5 grouped spines, each group composed of 1 long spine and 1–3 smaller spines. Apical margin of telson narrow, armed with 2 pairs of spines, outer spines as long as lateral larger spines, inner spines subequal in length with lateral smaller spines (Fig. 4 I).

*Etymology.* The specific name *brevicauda* is derived from Latin *brevis*, short, and *cauda*, telson.

*Remarks.* *Nipponomysis brevicauda* is characterized by the exopod of the fourth male pleopod with two terminal setae considerably different in length. Such character is found in *Nipponomysis takitai* (Murano, 1977) and *N. imparis* Takahashi & Murano, 1986. *N. brevicauda*, however, differs from these two species by the length ratio of the distal two segments of the exopod of the fourth male pleopod, the length/width ratio of the telson, and the number of spines in the statocyst region of the endopod of the uropod (Table 2).

*Nipponomysis brevicauda* is also distinguished from the other species of *Nipponomysis* by the characteristics of the telson. The telson is rather short and armed throughout the lateral margin with spines, of which larger spines arming on the distal 2/5 are almost same in length.

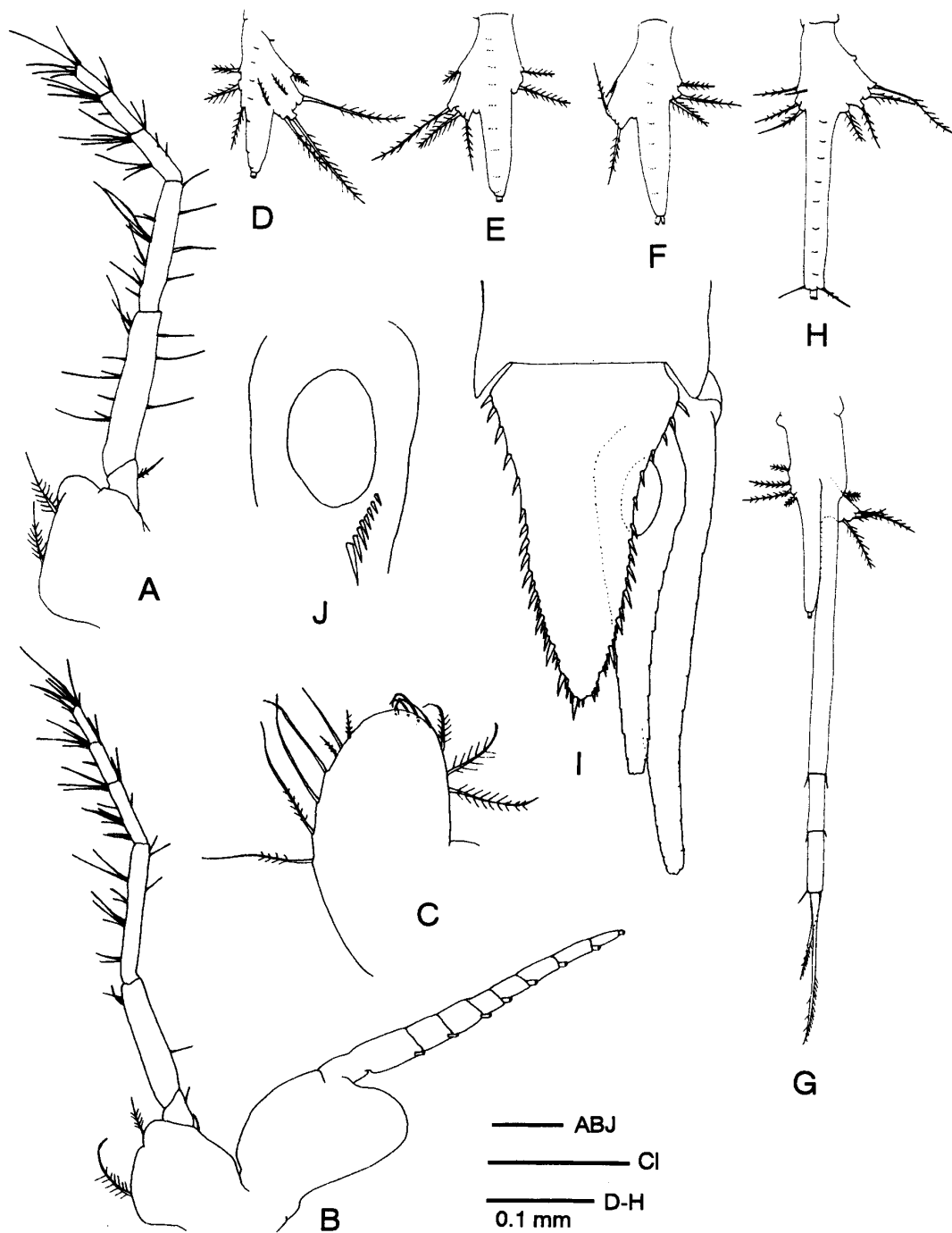


Fig. 4. *Nipponomysis brevicauda* sp. nov., A–J: male (holotype). A, endopod of fourth thoracic limb; B, eighth thoracic limb; C, penis, lateral view; D–H, first to fifth pleopods; I, telson and uropod, dorsal view; J, statocyst region of endopod of uropod, ventral view.

Table 2. Comparison of morphological charcters among *Nipponomysis takitai*, *N. imparis* and *N. brevicauda*.

	<i>N. takitai</i> (Murano, 1977)	<i>N. imparis</i> Takahashi & Murano, 1986	<i>N. brevicauda</i> sp. nov.
Exopod of fourth male pleopod	Third segment 1.5 times as long as second	Third segment 4 times as long as second	Third segment as long as second
Endopod of uropod	15–18 spines in statocyst region	15–21 spines in statocyst region	8 spines in statocyst region
Telson	Twice as long as broad	Twice as long as broad	1.7 times as long as broad

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